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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/685,905	10/10/2000	Yunzhou Li	10360/075001/12335BA	4628

34845 7590 04/13/2006	EXAMINER	
STEUBING MCGUINNESS & MANARAS LLP	LEZAK, ARRIENNE M	
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ACTON, MA 01720	ART UNIT	PAPER NUMBER
	2143	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5

January 2006 has been entered.

2.   Examiner notes that Claim 1 has been amended, and no claims have been

added or cancelled. All claims not explicitly addressed herein are found to be

addressed within prior Office Action dated 8 September 2005 as reiterated herein

below.

Claim Rejections - 35 USC § 112

3.   Examiner acknowledges and appreciates Applicant's amendment to the Claim 1

language removing the terminology "lost", and thus withdraws 35 USC § 112 rejections

based on the same.

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter, which the applicant regards as his invention.

5.   Claims 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Particularly, Examiner notes that Applicant's claim language recites, "determining if the <u>data path</u> of the router <u>includes forwarding information</u> for the multicast data;" which Examiner finds indefinite, as a path is merely a mechanism for communication between network nodes, and as such, would not include information concerning the forwarding of multicast data. Such information would be included within the multicast data itself. Proper correction is required.

6.   Additionally, Examiner notes that Applicant's claim language further recites, "if the <u>data path does not include forwarding information</u> for the multicast data, <u>broadcasting the multicast data</u> from each port that <u>could possibly</u> be associated with a destination of the multicast data;" and "subsequent to <u>broadcasting the multicast</u> data..." Again, Examiner finds that a path is merely a mechanism for communication between network nodes, and as such, would not include information concerning the forwarding of multicast data. Such information would be included within the multicast data itself. Proper correction is required. Moreover, Examiner finds Applicant's use of the terminology "broadcasting the multicasting data" to be unclear. A "broadcast" is a network communication sent to more than one recipient, whereas a "multicast" is a network communication <u>simultaneously</u> sent to more than one destination on a network. Thus, Examiner finds that Applicant's claim language is unclear as to whether the network communication is a simultaneous or non-simultaneous communication. Proper correction is required. Finally, Examiner finds Applicant's use of the terminology "could possibly" to be unclear. Proper correction is required. As Applicant's claim language is

found to be indefinite and unclear, Examiner will interpret Applicant's invention to teach

an adaptive multicasting functionality, as noted herein below.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 1-36 rejected under 35 U.S.C. 103(a) as being unpatentable over

extensive consideration of US Patent 5,903,559 to Acharya.

9.   Regarding Claims 1, 8, 15-17, 21 & 25, Acharya discloses a method, a machine-

readable medium and a router for processing multicast data associated with a multicast

group and transmitted to a port of a line card, (per pending Claims 16, 17, 21 & 25), of a

router, comprising the sequential steps of:

- determining whether a data path of the router includes forwarding

  information for the multicast data, (Fig. 8; Col. 7, lines 16-41; Col. 8,

  lines 51-67; Col. 9, lines 1-8; Col. 12, lines 43-67; Col. 13; Col. 14,

  lines 46-67; Col. 15, lines 1-29; and Col. 16, lines 21-27);

- if the data path does not include forwarding information for the

  multicast data, broadcasting the multicast data from each port of

  the router that could possibly be associated with a destination of

  the multicast data, (Fig. 8; Col. 7, lines 16-41; Col. 8, lines 51-67;

Col. 9, lines 1-8; Col. 12, lines 43-67; Col. 13; Col. 14, lines 46-67;

Col. 15, lines 1-29; and Col. 16, lines 21-27), (Examiner notes that

it would have been obvious to one of ordinary skill in the art at the

time of invention by Applicant to simultaneously broadcast data to

all possible destinations wherein a multicast transmission is

required and not all destination addresses are known, as a

broadcast is an obvious, well-known and effective means by which

device discovery is performed and further, Acharya clearly teaches

motivation via the need for a scalable multicast system capable of

accounting for the change in node number, (Col. 4, lines 13-15),

wherein a simultaneous broadcast or multicast is an obvious means

by which one detects node changes within the system.);

- subsequent to broadcasting the multicast data, determining via a

control path which ports of the router are actually associated with a

destination of the multicast data, (Fig. 8; Col. 7, lines 16-41; Col. 8,

lines 51-67; Col. 9, lines 1-8; Col. 12, lines 43-67; Col. 13; Col. 14,

lines 46-67; Col. 15, lines 1-29; and Col. 16, lines 21-27);

- whereby the multicast data is forwarded from the router even if the

multicast data is dropped in the control path, (Fig. 8; Col. 7, lines

16-41; Col. 8, lines 51-67; Col. 9, lines 1-8; Col. 12, lines 43-67;

Col. 13; Col. 14, lines 46-67; Col. 15, lines 1-29; and Col. 16, lines

21-27), (Examiner specifically notes that reading data within

Acharya is obvious (if not inherent) to determining the appropriate

group of output ports, as a determination obviously cannot be made

on anything without having read it first. Moreover, Examiner finds

that Acharya does teach the broadcasting of data to all possible

destintions, which broadcast is obviously done on all multicast

paths, (group members), regardless of subsequent dropped data,

(Acharya - Col. 13, lines 27-55)).

Thus, Claims 1, 8, 15-17, 21 & 25 are found to be unpatentable over considerable

consideration of the teachings of Acharya.

10.   Regarding Claims 2, 9, 18 & 23, Acharya discloses a method for transmitting

subsequent multcast data associated with the multicast group via only ports determined

to be appropriate for the multicast group, (per pending Claims 2, 9 & 18), (Fig. 8; Col. 7,

lines 16-41; Col. 12, lines 43-67; Col. 13; Col. 14, lines 46-67; & Col. 15, lines 1-29),

and wherein state information includes the source parameter indicating a source of the

data, (per pending Claim 23), (Col. 10, lines 42-49 and Col. 14, lines 39-45). Thus,

Claims 2, 9, 18 & 23 are found to be unpatentable over considerable consideration of

the teachings of Acharya.

11.   Regarding Claims 3, 10, 19 & 24, Acharya discloses a method wherein the state

information includes a group parameter indicating at least one destination of the data,

(Col. 10, lines 42-49; Col. 14, lines 39-45; and Col. 18, lines 55-58), (per pending Claim

24), and wherein the reading of multicast data includes transmitting the multicast data

via all ports except the port on which the multicast data was received, (per pending

Claims 3, 10 & 19), (Fig. 8; Col. 7, lines 16-41; Col. 12, lines 43-67; Col. 13; Col. 14,

lines 46-67; & Col. 15, lines 1-29). Thus, Claims 3, 10, 19 & 24 are found to be

unpatentable over considerable consideration of the teachings of Acharya.

12.   Regarding Claims 4 & 11, Acharya discloses a method comprising performing a

reverse path forwarding check on the data, (Col. 16, lines 8-27 and Col. 24, lines 43-

58). Thus, Claims 4 & 11 are found to be unpatentable over considerable consideration

of the teachings of Acharya.

13.   Regarding Claims 5, 7, 12 and 14, Acharya discloses a method wherein

performing and verifying is done using a multicast border gateway protocol, (Col. 24,

lines 43-58). Thus, Claims 5, 7, 12 and 14 are found to be unpatentable over

considerable consideration of the teachings of Acharya.

14.   Regarding Claims 6, 13 and 31, Acharya discloses a method comprising verifying

that the data, including known state information, was received at the proper line card,

(Col. 18, lines 42-67 and Col. 19, lines 1-19). Thus, Claims 6, 13 and 31 are found to be

unpatentable over considerable consideration of the teachings of Acharya.

15.   Regarding Claims 20, 22 & 30, Acharya discloses a method for processing

multicast data which is associated with a multicast group and transmitted to a port of a

line card of a router comprising: receiving multicast data inclusive of known, (per

pending claim 30), and unknown state information, (Fig. 8; Col. 14, lines 46-67 and Col.

15, lines 1-29); storing the multicast data with default state information, (Col. 7, lines 16-

41 and Col. 16, lines 21-27); reading/broadcasting the multicast data from a plurality of

ports of the router that could possibly be associated with a destination of the multicast

data, (Fig. 8; Col. 7, lines 16-41; Col. 12, lines 43-67; Col. 13; Col. 14, lines 46-67; & Col. 15, lines 1-29); subsequent to broadcast of the multicast data, performing a reverse path forwarding check on the multicast data, (Col. 16, lines 8-27 and Col. 24, lines 43-58); verifying that the multicast data was received at a proper interface, (Col. 18, lines 42-67 and Col. 19, lines 1-19); determining a multicast group associated with the multicast data; and routing or multicasting the multicast data to the multicast group or all available interfaces, (Col. 22, lines 26-67); and routing the subsequent multicast data associated with the multicast group from only the ports associated with the multicast group, (Fig. 8; Col. 7, lines 16-41; Col. 12, lines 43-67; Col. 13; Col. 14, lines 46-67; & Col. 15, lines 1-29). Thus, Claims 20, 22 & 30 are found to be unpatentable over considerable consideration of the teachings of Acharya.

16.　　Regarding Claims 32 and 33, Acharya discloses multicasting data including known state information according to the known state information if the multicast data including known state information is verified, (pending Claim 32), and dropping the multicast data including known state information if the multicast data including known state information is not verified, (pending Claim 33), (Col. 14, lines 46-67 and Col. 15, lines 1-29). Thus, Claims 32 & 33 are found to be unpatentable over considerable consideration of the teachings of Acharya.

17.　　Regarding Claim 26, Acharya discloses a method wherein a data path associated with a router and configured to process multicast data executes the performing and verifying, (Col. 8, lines 52 –61; Col. 10, lines 42-49; Col. 22, lines 58-67;

and Col. 23, lines 36-51). Thus, Claim 26 is found to be unpatentable over considerable consideration of the teachings of Acharya.

18.   Regarding Claim 27, Acharya discloses a method wherein the data path uses a multicast border gateway protocol in executing the performing and the verifying, (Col. 24, lines 43-59). Thus, Claim 27 is found to be unpatentable over considerable consideration of the teachings of Acharya.

19.   Regarding Claim 28, Acharya discloses a method wherein the processor included in a router and configured to process multicast data executes the determining, (Fig.11 and Col. 19, lines 20-26). Thus, Claim 28 is found to be unpatentable over considerable consideration of the teachings of Acharya.

20.   Regarding Claim 29, Acharya discloses a method comprising trimming routes to paths not associated with multicast groups, (Col. 14, lines 46-67 and Col. 15, lines 1-29). Thus, Claim 29 is found to be unpatentable over considerable consideration of the teachings of Acharya.

21.   Regarding Claim 34, Acharya discloses a method for processing multicast data which is associated with a multicast group and transmitted to a port of a line card of a router, (Fig. 8; Col. 7, lines 16-41; Col. 12, lines 43-67; Col. 13; Col. 14, lines 46-67; & Col. 15, lines 1-29), comprising: determining whether a data path of the router includes forwarding information for the multicast data; if the data path does not include forwarding information for the multicast data, installing a default state associated with multicast data in a data path of a line card, (Col. 14, lines 46-67 and Col. 15, lines 1-29), (Examiner notes that determination of multicast forwarding information is obvious in light

of device discovery as noted herein above); broadcasting the multicast data from the line card to all other line cards that the line card is configured to communicate with, (Col. 22, lines 26-67); sending the multicast data from the data path to a control path of the line card, (Col. 22, lines 58-67); subsequent to broadcasting the multicast data, at the control path, computing a route for the multicast data, (Col. 23, lines 20-35); and designating that the line cards not included in the computed route not broadcast multicast data having the same state information and subsequently received at the data path, (Col. 14, lines 46-67 and Col. 15, lines 1-29). Thus, Claim 34 is found to be unpatentable over considerable consideration of the teachings of Acharya.

22.   Regarding Claim 35, Acharya discloses a method comprising performing at the data path a reverse path forwarding check on the multicast data using a multicast gateway border protocol, (Col. 16, lines 8-27 and Col. 24, lines 43-58). Thus, Claim 35 is found to be unpatentable over considerable consideration of the teachings of Acharya.

23.   Regarding Claim 36, Acharya discloses a method comprising prior to the installing, checking state information associated with the multicast data with a multicast border gateway protocol to verify that the line card received the multicast data from a proper source, (Col. 18, lines 42-67; Col. 19, lines 1-19; Col. 22, lines 26-67; and Col. 24, lines 43-58). Thus, Claim 36 is found to be unpatentable over considerable consideration of the teachings of Acharya.

Response to Arguments

24.   Applicant's arguments filed 5 January 2006, have been fully considered but they are not persuasive. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

25.   For convenience, Examiner incorporates previous argument between the parties as follows:

    Examiner notes that Applicant's claims have been written so broadly that any arbitrary state information, including that enumerated within Acharya, may be made to read upon them. In particular, as to Applicant's argument regarding the storage of state information, Examiner notes that Acharya teaches the storage of cells in a buffer, which cells inherently comprise state information, (Col. 7, line 38). As to Applicant's argument concerning the line card and controller, Examiner notes that Acharya teaches a line interface card wherein the ATM is switched dynamically, and therefore are inherently dynamically configuring said line cards, (in fact, said line cards are being configured specifically to exclude the multicast data on specific computed route(s)), (Col. 7, lines 37-51). As to Applicant's argument concerning the receipt of multicast data including unknown state information, Examiner observes that Acharya transmits information that is unknown to a second router from a first router, (Col. 15, line 14 – note: 1-2 bcast bitmap created by first router is unknown by second router).

26.   In response to applicant's argument that the Archarya fails to disclose the use of

both paths, Examiner respectfully disagrees noting that Acharya clearly establishes two-

way communication wherein both paths are obviously utilized in a manner similar to that

of Applicant's claimed invention.

27.   Regarding Applicant's argument that Archarya teaches away from the claimed

invention, Examiner respectfully disagrees noting that Applicant has taken the cited

portion of the reference out of context and should consider that portion of the reference

concerning the multicasting functionality as reading on Applicant's claim language as

written. Specifically, Acharya does teach the broadcasting of data to all possible

destintions, which broadcast is obviously done on all multicast paths, (group members),

regardless of subsequent dropped data, (Acharya - Col. 13, lines 27-55).

28.   In response to applicant's argument that the prior art teaches broadcast for

discovery as opposed to Applicant's use of broadcast to help assure that the packets

reach their intended destination, Applicant is reminded that a recitation of the intended

use of the claimed invention must result in a structural difference between the claimed

invention and the prior art in order to patentably distinguish the claimed invention from

the prior art. If the prior art structure is capable of performing the intended use, then it

meets the claim.

29.   Additionally, Examiner notes that the Claims, as amended, do not recite

patentable subject matter, as noted herein above. Thus, as Examiner has completely

addressed Applicant's amendment, and finding Applicant's arguments do not show how

the amended claims language avoids such references or objections, Examiner hereby

maintains the rejection of all claims in their entirety.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

> US Patent US 6,795,403 B1 to Gundavelli;
>
> US Patent 7,016,351 B1 to Farinacci;
>
> US Patent US 6,611,872 B1 to McCanne.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Arrienne M. Lezak whose telephone number is (571)-

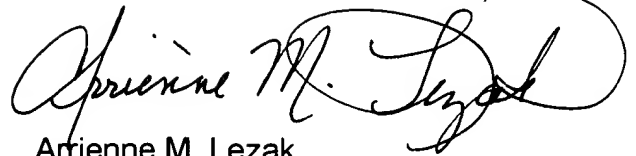272-3916. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David A. Wiley can be reached on (571)-272-3923. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Arrienne M. Lezak
Examiner
Art Unit 2143

AML